ANNOUNCEMENT OF FEDERAL FUNDING OPPORTUNITY

EXECUTIVE SUMMARY

- **Federal Agency Name(s):** National Weather Service (NWS), National Oceanic and Atmospheric Administration (NOAA), Department of Commerce
- **Funding Opportunity Title:** Collaborative Science, Technology, and Applied Research (CSTAR) Program
- **Announcement Type:** Initial Announcement
- **Funding Opportunity Number:** CSTAR 2004
- **Catalog of Federal Domestic Assistance(CFDA)Number(s):** 11.468, Applied Meteorological Research
- **Dates**: Proposals must be received by the NWS no later than 5 p.m., local time, October 23, 2003.
- **Funding Opportunity Description**: The CSTAR Program represents an NOAA/NWS effort to create a cost-effective transition from basic and applied research to operations and services through collaborative research between operational forecasters and academic institutions which have expertise in the environmental sciences. These activities will engage researchers and students in applied research of interest to the operational meteorological community and will improve the accuracy of forecasts and warnings of environmental hazards by applying scientific knowledge and information to NWS products and services. The NOAA CSTAR Program is a contributing element of the U.S. Weather Research Program. NOAA's program is designed to complement other agency contributions to that national effort.

FULL ANNOUNCEMENT TEXT

I. Funding Opportunity Description

A. Program Objective

The long term objective of the CSTAR Program is to improve the overall forecast and warning capabilities of the operational hydrometeorological community by addressing the following national science priorities through collaborative efforts between the NWS and academic institutions:
Quantitative precipitation estimation (QPE) and forecasting (QPF), including precipitation type and probabilistic QPF; Flash flood and probabilistic river prediction; Prediction of seasonal-to-interannual and decadal climate variability, and the impacts of these variabilities on extreme weather events; Prediction of tropical cyclones near landfall, including track, intensity, and associated precipitation, and hazardous weather; Prediction of marine conditions, including fog,

winds, coastal ocean, and open-ocean waves; The effect of topography and other surface forcing on local weather regimes; Locally hazardous weather, especially severe convection, winter weather, and phenomena that affect aviation; and Conditions conducive for the rapid development of wildfires and the dispersion of smoke and other air-quality hazards.

Another rapidly emerging national priority which needs to be addressed through collaborative research activities is applying sound science and innovative techniques toward optimizing the utilization of interactive forecast preparation systems and gridded databases.

Individual NWS Regions and NCEP service centers have a subset of these national science priorities due to differences in factors such as topography, weather regimes, and mission.

B. Program Priorities

NOAA will give sole attention to individual proposals addressing the identified science priorities from NWS Regions and NCEP service centers as listed below or which directly address or incorporate solutions to science issues related to interactive forecast preparation systems and gridded data bases. Proposals must clearly specify which primary science priorities are being addressed.

A proposal must contain at least two distinct subtasks addressing one or more of the science priorities listed. Principal investigators (PIs) must clearly address the science and technology transfer process contained within the proposal. This includes their interactions with operational NWS units, including weather offices, River Forecast Centers, NCEP service centers, and regional offices, with the specific goal of improving operational services.

The names, affiliations, and phone numbers of relevant NWS regional/NCEP focal points are provided. Prospective applicants should communicate with these focal points for information on priorities within regional science priorities. Focal points cannot assist in the conceptual design and specific elements to be included in a proposal. Applicants should send completed proposals to the NOAA/NWS program office identified in Section IV.F., rather than to individual focal points.

1. Scientific Issues Related to the NWS/Interactive Forecast Preparation System (IFPS) and the National Digital Forecast Database (NDFD)

The NWS has developed the following national science priorities related to IFPS and NDFD that can be addressed by or incorporated in individual proposals:

a. The development of a national real-time, gridded verification system of surface-based parameters to track the accuracy of both the numerical model guidance and the official, forecaster-edited grids.

b. Research, development, and implementation of statistical methods to objectively produce bias-corrected model grids (e.g. from grids, not just points) for operation forecast office use.

c. Research, development, and implementation methods to objectively downscale forecast and ensemble grids to the resolution necessary (2-5 km) to improve IFPS forecasts and forecast methodology.

d. Development and implementation of climatology grids for use in graphical forecast editing applications.

e. Development of short- and long-range ensemble mean and spread data in gridded form.

FOR FURTHER INFORMATION CONTACT: Kevin Schrab, NOAA/NWS/Office of Science and Technology, 301-713-1975 ext. 135, or on the Internet at Kevin.Schrab@noaa.gov.

2. NWS Eastern Region Science Priorities

NWS Eastern Region has identified the following science priorities to be addressed by proposals:

a. The roles of unique geomorphic influences on weather problems such as the type, amount, and intensity of precipitation associated with the complex terrain of the Appalachian Mountains, Atlantic Seaboard, and the Great Lakes. The interaction of these terrain features with large scale weather systems such as winter storms, hurricanes, and closed lows.

b. The development of more accurate, region-specific conceptual models for tornado, hail, high wind (both convective and synoptic), flash flood, and localized heavy snow events. Detailed investigation of the roles of mesoscale phenomenon such as gravity waves, thermal and moisture boundaries, and localized instabilities during these events. Improved understanding of low-topped severe convection and associated tornado development.

c. Cloud physics and associated microphysical processes and their role in determining precipitation type and snowfall efficiency.

d. The relationship of land-falling tropical storms and hurricanes to severe weather and heavy precipitation resulting in flooding and flash flooding.

e. The processes of snow melt and river ice formation and break-up and their roles in widespread river flooding.

f. The development of high resolution surface analysis systems and the application of these analyses to verification of gridded hydrometeorological forecasts.

g. The development of improved methodologies for forecasting the onset and dissipation of fog and low ceilings for different geographical locations across the eastern United States.

h. The processes that lead to high winds, waves, and flooding near the Atlantic Coast, Chesapeake Bay, and Great Lakes.

i. Innovative approaches to formulate, produce, display, deliver, and verify high resolution forecasts and products for the heavily populated eastern United States.

j. Develop innovative methodologies to communicate forecast uncertainties to a wide variety of users.

FOR FURTHER INFORMATION CONTACT: Kenneth Johnson, NOAA/NWS/Eastern Region Scientific Services Division, 631-244-0136, or on the Internet at Kenneth.Johnson@noaa.gov.

3. NWS Southern Region Science Priorities

The NWS Southern Region science priorities to be addressed by proposals are as follows:

a. Development of improved techniques for the prediction of freezing and frozen precipitation events in the NWS Southern Region, including timing, areal extent, intensity and amount.

b. Development of diurnal lightning and cloud climatologies stratified by weather regime to better predict the onset, spatial coverage, and duration of precipitation, especially under weak synoptic forcing.

c. Development of improved techniques to forecast and monitor heavy-rain events.

d. Development of relationships between land falling tropical cyclones and associated severe weather, including heavy precipitation, flooding and flash flooding, throughout the southern United States.

e. Development of improved techniques to observe and forecast winds and waves in the coastal environment.

f. Improved understanding of the influences of the complex terrain of the southern Appalachians, the Texas Hill Country, the Mexican Plateau, and the Gulf Coast on weather problems such as type, amount, duration and intensity of precipitation and resultant flash flooding.

g. Development of optimal strategies for using mesoscale models to accurately predict the effects of topography and other surface forcing on local weather.

h. Improved methodologies to better predict the development and duration of stratus, fog and other conditions which result in instrument flight rule (IFR) flying conditions in the NWS Southern Region.

i. Development of methodologies for use of Doppler weather radar (WSR-88D) and multi-sensor technology to detect/identify storm features leading to, and/or associated with, the development of weak (F0 and F1) tornadoes and waterspouts which are characteristic of tropical and semi-tropical environments.

j. Development of methodologies for the use of Doppler weather radar and other multi-sensor technology to detect precursor conditions and enhance forecast capabilities for improved warnings associated with microburst producing thunderstorms.

k. Development of optimal WSR-88D scan strategies and adaptable parameter settings for accurately estimating heavy precipitation amounts.

l. Development of techniques to improve hydrologic modeling and prediction for Southern U.S. rivers and streams, including calibration of models, improved distributive modeling techniques, and improved soil moisture accounting.

m. Development of methodologies to better predict the type, duration, and severity of arctic outbreaks that result in damaging freezes affecting the NWS Southern Region.

n. Development of improved methods for utilizing data analysis, manipulation and communication technology (Internet, Web sites, Geographic Information Systems, etc.) for preparing and disseminating high resolution hydrological and meteorological forecasts and products which best serve the changing needs of varied users.

FOR FURTHER INFORMATION CONTACT: Dan Smith, NOAA/NWS/Southern Region Scientific Services Division, 817-978-2671, or on the Internet at dan.smith@noaa.gov.

4. NWS Central Region Science Priorities

The NWS Central Region science priorities to be addressed by proposals are as follows:

a. Improve hazardous weather warnings for different geographical locations in Central Region, including the Central Plains, Northern Plains, Ozark Plateau, mid and upper Mississippi Valley, lower Ohio Valley and Great Lakes regions by:

(1)Developing more accurate, region-specific conceptual models for tornado, hail, high wind, heavy precipitation, and elevated nocturnal convection events.

(2)Developing more accurate, region-specific diagnostic strategies/methodologies to interrogate remotely sensed data (radar, satellite, etc.) and numerical weather guidance with emphasis on weaker and shorter lived severe thunderstorm and tornado events.

b. Improve Central Region winter weather precipitation forecasts by:

(1)Developing a climatology of winter precipitation events including, but not limited to, heavy snow, sleet or freezing rain stratified by Central Region County Warning Forecast Areas and relating it to public products and services.

(2)Linking cloud physics and associated micro-physical processes, precipitation efficiency, water vapor distribution, and transport of winter stratiform and/or convective clouds to improved methodologies for estimating or forecasting winter precipitation amounts.

c. Improve the accuracy (probability of detection) and average forecast lead time for winter storm warnings by better understanding the development, intensification, and sudden acceleration northeastward of strong mid-west storm systems following Rocky Mountain lee-side cyclogenesis.

d. Improve aviation forecast products and services by:

(1)Developing a climatology of ceiling, visibility, and low-level wind shear for Central Region county warning forecast areas.

(2)Developing better methodologies to forecast the onset and dissipation of fog and low ceilings for different geographical locations in the Central Region.

e. Improve the utility and utilization of numerical guidance in the forecast process by developing more efficient and effective methodologies to display, review, and interrogate numerical model output in an operational environment.

f. Improve the quality of weather services to the public through the development of new and innovative forecast methodologies and products.

FOR FURTHER INFORMATION CONTACT: Peter Browning, NOAA/NWS/Central Region Scientific Services Division,
816-891-7734 ext. 300, or on the Internet at Peter.Browning@noaa.gov.

5. NWS Western Region Science Priorities

The NWS Western Region science needs to be addressed by proposals are as follows:

a. Improve operational precipitation and hydrological forecasts in complex terrain across a wide range of western U.S. meteorological regimes. In the West, water is a critical and closely managed resource.

b. Improve wintertime forecasts of snow in complex terrain.
Improve acquisition and use of non-NWS observational networks, such as mesonets.

c. Improve analysis through better assimilation systems that produce more realistic analysis in complex terrain.

d. Improve numerical model performance in western complex terrain.

e. Research, develop and help implement statistical methods to objectively produce bias-corrected model grids (e.g. from grids, not just points) to improve gridded forecasts.

f. Research, develop and help implement methods to objectively downscale forecast and ensemble grids to the resolution necessary (2-5km) to help improve IFPS forecasts and forecast methodology.

g. Improve hydrological modeling, through use of emerging techniques, such as distributed hydrologic modeling, of rain/snow melt processes in complex terrain.

h. Develop conceptual models that better describe the effect of complex terrain on weather forecasts.

i. Improve precipitation and flash flooding forecasts produced from high based convection with a deep dry sub cloud layer in the arid inter-mountain region.

j. Improve forecast of significant precipitation events that produce flooding and affect marine forecasts along the west coast.

k. Improve forecast of the onset of the monsoon season and flash flooding in the desert Southwest.
Improve snow and wind forecast associated with arctic front intrusion into complex terrain in the northern plains.

l. Improve fire-weather forecasts and smoke dispersion in the western United States.

m. Improve forecasters ability to produce forecasts of temperature, humidity, and winds in complex terrain.

n. Improve forecast and warnings of severe weather unique to the western United States through the better use of observational systems and conceptual models.

o. Improve the performance of coastal and mountain-top WSR-88D radars on a variety of NWS Western Region weather regimes, such as high based inter-mountain convection and low topped storms along the west coast.

FOR FURTHER INFORMATION CONTACT: Andy Edman, NOAA/NWS/Western Region Scientific Services Division,
801-524-5131, or on the Internet at andy.edman@noaa.gov.

6. NWS Alaska Region Science Priorities

The science priorities of the NWS Alaska Region to be addressed by proposals are as follows (in order or importance):

a. Determine the geomorphic influences on type, amount, duration, and intensity of snow associated with complex terrain to improve forecasts for the Anchorage, Alaska, area, where over 50 percent of the state population resides.

b. Develop better methodologies to forecast winds over the marine inland waters of southeast Alaska. Methodologies can include numerical forecasts from mesoscale models.

c. Improve methodologies to forecast fog in the Alaska coastal communities located along the coast of the Gulf of Alaska.

d. Improve the winter season WSR-88D-based rain and snow QPEs. All six sites are influenced by complex topography.

FOR FURTHER INFORMATION CONTACT: Gary Hufford, NOAA/NWS/Alaska Region Environmental and Scientific Services Division, 907-271-3886, or by e-mail at gary.hufford@noaa.gov.

7. NWS Pacific Region Science Priorities

The science priorities of the NWS Pacific Region to be addressed in proposals are as follows:

a. Optimize the utility of new and existing observing systems, with emphasis on satellites and their use in providing precipitation estimations.

b. Develop, optimize, and utilize local high-resolution modeling capabilities aimed at providing operational real-time guidance as well as a tool for locally conducted research.

c. Conduct Pacific Basin synoptic climatological studies, with emphasis on flash-flood and high-wind events.

FOR FURTHER INFORMATION CONTACT: Ken Waters, NOAA/NWS/Pacific Region Regional Scientist, 808-532-6413, or on the Internet at Ken.Waters@noaa.gov.

8. NWS National Centers for Environmental Prediction Science Priorities

NCEP service centers have established the following science priorities which may be addressed in proposals:

a. Aviation Weather Center

(1)Develop global detection and monitoring techniques with time scales of one hour or less.

(2)Develop numerical and subjective techniques to improve the accuracy of convective forecasts in the 2-6 hour time scale.

(3)Develop numerical and subjective techniques to improve the accuracy of convective forecasts in the 12-36 hour time scale.

(4)Develop probabilistic forecasts of convection in the 2-6 hr time scale.

(5)Develop convective initiation forecast trigger times to within 1 hour of actual start of convection.

(6)Improve the treatment of drizzle-size droplets in clouds that lead to aircraft icing through improved parameterization and/or explicit microphysics techniques that are both economical and support cloud initialization using existing observational data sets, including the Automated Surface Observing System, radar, and satellite data.

(7)Develop improved methods to detect, monitor, and predict in-cloud icing potential.

(8)Enhance understanding of the triggering mechanisms associated with different families of clear-air turbulence events, including gravity waves emanating from convective systems, gravity waves induced by jet streaks, cross-mountain flow, critical boundary-layer flow regimes, etc.

(9)Develop algorithms/methods to detect and forecast in-cloud turbulence.

(10)Develop global detection and monitoring techniques with time scales of one hour or less.

(11)Develop methods to detect and monitor the existence of clear-air turbulence by remote sensing and in-situ methods.
Develop improvements to current clear-air turbulence forecast algorithms and/or develop new algorithms tailored to mid and upper level clear-air turbulence prediction.

(12)Develop methods to detect and monitor the existence of low-level mechanical turbulence by remote sensing and in-situ methods. Methods should lead towards the development of new automated low-level turbulence forecast techniques.

(13)Develop techniques for forecasting the time of formation and burn off of IFR and LIFR conditions to within one hour.

(14)Develop methods to detect multiple layer cloud bases and tops.

(15)Develop methods to measure slant range visibility and mid-layer haze layers, leading to the development of forecast algorithms.

(16)Develop improved methods to detect and forecast movements of volcanic ash clouds.

(17)Develop methods to detect forest fire smoke and forecast its movement, especially in mountain valleys.

(18)Develop tools for the conversion of cloud height observations from height above ground to height above sea level. Use these tools to make displays of mountain obscuration hazards.

(19)Develop technology for the interactive generation of aviation forecast products in graphical, text, and gridded formats.

(20)Develop encoders for BUFR format of all aviation graphical products.

(21)Develop methods to provide feedback to forecasters on their current skill in forecasting aviation hazards.

(22)Develop methods for model diagnostics that provide information on model performance of intensity and phase errors of recent forecasts as compared to current conditions.

b. Climate Prediction Center

(1)Develop physically based techniques to improve the prediction skill of weekly (e.g., 6-10 Day, Week 2, Week 3, Week 4), monthly, and seasonal precipitation and temperature, including regional climate prediction systems. Methods may include improving dynamic and coupled models and model ensembles, as well as combining output from multiple models and super-ensembles.

(2)Develop improved national and global forecasts of seasonal climate variability through better understanding of the couple atmosphere/ocean system and the effects of climate variations on that coupling and on ensemble systems.

(3)Improve the ability of climate models to capture the statistics of weather, and the linkage between climate variability and weather extremes.

(4)Improve objectivity and verification techniques for U. S. and international Threats Assessments which cover time scales from several days to multiple seasons. Threats include all extreme weather and climate phenomena such as droughts, floods, storms, hurricanes, cold, heat.

(5)Develop comprehensive modeling of land surface hydrology to the benefit of physical understanding, and improved hydrological forecasts in all seasons and improved seasonal temperature and precipitation forecasts in the warm half year.

(6)Develop improved methods for predicting and using, short and long time scale variability in seasonal climate forecasting, e.g., the Arctic Oscillation and the Madden Julian Oscillation. This may also include investigation of possible interaction between troposphere and stratosphere and the long-term aspects of ozone change and climate trends/change in general.

(7)Develop improved and collaborative methods for diagnosing, evaluating and comparing climate model output.
Develop improved drought monitoring and seasonal drought outlook techniques.

(8)Improve seasonal hurricane outlooks through improved understanding of the impacts of intraseasonal and decadal scale variability on tropical storm activity.

(9)Develop new seasonal forecast products for health, e.g., for air quality, air stagnation, disease, excess heat and cold.

c. Hydrometeorological Prediction Center (HPC)

Focus on efforts related to addressing the broad geographical and seasonal ranges of problems associated with QPF, from initiation, duration, movement, to winter weather type. This includes the spectrum from drizzle to heavy rain and from flurries through lake-effect snow to synoptic-scale snowfall. Specifically:

(1)Develop improved techniques for the prediction of freezing and frozen precipitation events including timing, areal extent, intensity, and amount.

(2)Develop improved techniques to forecast extreme rainfall events.

(3)Develop relationships between heavy precipitation, flooding, and flash flooding resulting from remnants of land falling tropical cyclones.

(4)Develop new model verification techniques to enhance current methods of objectively assessing which models will perform best. The techniques should apply for all time ranges used by HPC, from less than 6 hours to 7 days.

(5)Develop better techniques to incorporate uncertainty derived from short and medium range ensembles forecasts into the forecast process and convey this uncertainty to users of HPC products.

(6)Develop techniques to modify gridded numerical guidance to produce gridded forecast products, which are made horizontally, vertically, and temporally consistent using sound meteorological theory.

(7)Find better ways to manipulate model guidance to produce gridded sensible weather forecasts that can be efficiently and effectively ingested by IFPS for use at WFOs and RFCs.

d. Ocean Prediction Center (OPC)

(1)Improve use of all sources of surface marine observations in data assimilation for numerical weather prediction.

(2)Improve numerical weather prediction of marine boundary layer.

(3)Improve numerical weather prediction of explosive extratropical cyclogenesis.

(4)Improve numerical weather prediction of hazardous mesoscale marine conditions in the vicinity of the Gulf Stream.

e. Storm Prediction Center

(1)Develop mesoscale or storm-scale numerical prediction models, ensemble approaches, and verification techniques to improve forecasts of the location, timing, intensity, and mode of deep moist convection and its associated hazards.

(2)Develop three-dimensional mesoscale analysis techniques, observing systems, expert systems or statistical guidance, robust conceptual models, and scientific understanding to improve forecasts of the location, timing, intensity, and mode of deep moist convection and its associated hazards.

(3)Improve technology to extract information from multiple radars on national scales (including velocity analysis information and real time monitoring).

f. Tropical Prediction Center (TPC)

(1)Improve understanding and guidance on tropical cyclone intensity change, with highest priority on the onset, duration and magnitude of rapid intensification events for tropical cyclones.

(2)Improve understanding of how inner-core structure/dynamics (e.g., concentric eye wall cycles) affect intensity change, and inclusion of this knowledge base into objective guidance.

(3)Improve intensity forecasts for environments with significant vertical shear.

(4)Determine the effects of upper ocean heat content on tropical cyclone intensity change.

(5)Improve forecast skill of situations where there is rapid intensification of tropical cyclones.

(6)Develop statistically-based real-time "guidance on guidance" for track, including multi-model consensus approaches, "super-ensembling", etc. Provide guidance to forecasters in probabilistic and other formats.

(7)Develop methods to provide objective information on the situational strengths and weaknesses of the available
numerical models.

(8)Improve understanding and guidance on tropical cyclone precipitation amount and distribution.

(9)Identify, understand, and then reduce guidance and official track forecast error of outlier storms, focusing on both large speed errors (e.g., accelerating "recurvers" and stalling storms) and large direction errors (e.g., loops and tropical cyclones like Mitch (1998) and Keith (2000)).

(10)Develop methods to improve tropical cyclone track forecasts (and/or related watch/warning information).

Note: In all instances, projects are encouraged which not only address the priorities of individual NCEP service centers but also address aspects of the NCEP/Environmental Modeling Center's goals for improving data assimilation and numerical modeling of the atmosphere, oceans, and Earth's surface.

FOR FURTHER INFORMATION CONTACT: Dennis Staley, NOAA/NWS/National Centers for Environmental Prediction, 301-763-8000 ext. 7007, or on the Internet at Dennis.Staley@noaa.gov.

C. Program Authority

Authority for the CSTAR program is provided by the following: 15 U.S.C. 313; 49 U.S.C. 44720 (b); 33 U.S.C. 883d; 15 U.S.C. 2904; 15 U.S.C. 2934.

II. Award Information

A. Funding Availability

This funding opportunity announces that approximately $500,000 will be available through this announcement for fiscal year 2004. Proposals should be prepared assuming an annual budget of no more than $125,000. It is expected that approximately four awards will be made, depending on availability of funds.

B. Project/Award Period

This program announcement is for projects to be conducted by university investigators for a 1-year, 2-year, or 3-year period, with an anticipated start date of April 1, 2004. When a proposal for a multi-year award is approved, funding will initially be provided for only the first year of the program. If an application is selected for initial funding, the NWS has no obligation to provide additional funding in connection with that award in subsequent years. Funding for each subsequent year of a multi-year proposal is at the discretion of the NWS. It will be contingent upon satisfactory progress in relation to the stated goals of the proposal to address specific science needs and priorities of the NWS and the availability of funds. Applications must include a scope of work and a budget for the entire award period.

C. Type of funding instrument

The funding instrument for extramural awards will be a cooperative agreement since one or more NOAA/NWS components--forecast offices, National Centers for Environmental Prediction (NCEP) service centers, or regional headquarters--will be substantially involved in implementation of the project. Examples of substantial involvement may include, but are not limited to, proposals for collaboration between NOAA scientists and a recipient scientist and/or contemplation by NOAA of detailing Federal personnel to work on proposed projects. NOAA/NWS believes its warning and forecast mission will benefit significantly from a strong partnership with outside investigators. Current program plans assume the total resources provided through this announcement will support extramural efforts through the broad academic community.

III. Eligibility Information

A. Eligible Applicants

Eligible applicants are institutions of higher education and federally funded educational institutions such as the Naval Postgraduate School. This restriction is needed because the results of the collaboration are to be incorporated in academic processes which ensure academic multidisciplinary peer review as well as Federal review of scientific validity for use in operations.

B. Cost Sharing or Matching Requirement

No cost sharing is required under this program.

C. Other

Since a goal of this announcement is to foster long-term collaborative interactions between a university and NWS operational offices/NCEP service centers, a proposal must be submitted by at least two principal investigators (PIs) from the same college or university. In addition, collaboration with PIs at different universities is allowed, but there must be a single application from a lead university (with two principal investigators from that university) with subawards to participants from other institutions. Other arrangements will not be considered. At least two of the PIs within this program must be full, assistant, or associate college or university professors with substantial documented involvement in the proposal. Proposals should clearly state the role of each PI in the project.

Except for researchers who are associate, assistant, or full professors at the Naval Postgraduate School or other federally funded educational institutions, Federal Government employees are not allowed to be listed as PIs, although collaboration between the academic community and NOAA within the project is strongly encouraged.

IV. Application and Submission Information

A. Address to Request Application Package

Application packages are available at
http://www.ofa.noaa.gov/%7Egrants/appkit.html

If for some reason the applicant has difficulty downloading the required forms, he or she should contact Sam Contorno, NOAA/NWS; 1325 East-West Highway, Room 15330; Silver Spring, Maryland 20910-3283, or by phone at 301-713-3557 ext. 150, or fax to 301-713-1253, or via internet at samuel.contorno@noaa.gov. The NOAA/NWS does not have a direct telephonic device for the deaf (TDD capabilities can be reached through the State of Maryland-supplied TDD contact number, 800-735-2258, between the hours of 8 a.m.-4:30 p.m.)

B. Content and Form of Application Submission

Proposals must adhere to the three provisions under "Proposals" and the seven requirements under "Required Elements" by the deadline of October 23, 2003. Failure to follow these restrictions will result in proposals being returned to the submitter without review.

1. Proposals

a. Proposals submitted to the NOAA NWS CSTAR Program must include the original and two unbound copies of the proposal.

b. Investigators are not required to submit more than three copies of the proposal. Investigators are encouraged to submit sufficient proposal copies for the full review process if they wish all reviewers to receive color, unusually sized (not 8.5x11), or otherwise unusual materials submitted as part of the proposal. Only an original version of the federally required forms and two copies are needed.

c. Proposals should be no more than 30 pages (numbered) in length, including budget, investigators vitae, and all appendices and should be limited to funding requests for 1- to 3-year duration. Appended information should be counted within the 30-page total. Federally mandated forms are not included within the page count.

2. Required Elements

All proposals should include the following elements:

a. Signed title page. The title page should be signed by the PIs and the institutional representative and should clearly indicate which project area is being addressed. The PIs and institutional representative should be identified by full name, title, organization, telephone number, and address. The total amount of Federal funds being requested should be listed for each budget period.

b. Abstract: An abstract must be included and should contain an introduction of the problem, rationale, and a brief summary of work to be completed. The abstract should appear on a separate page, headed with the proposal title, institution's investigators, total proposed cost, and budget period.

c. Results from prior research. The results of related projects supported by NOAA and other agencies should be described, including their relation to the currently proposed work. Reference to each prior research award should include the title, agency, award number, PIs, period of award, and total award. The section should be a brief summary and should not exceed two pages total.

d. Project description. The proposed project must be completely described, including identification of the problem; scientific objectives; proposed methodology; relevance to the priorities of the NWS Region or NCEP service center; operational applicability; scientific merit; proposed technology transfer; past collaborations with operational hydrometeorologists; cost effectiveness of research; and the program priorities listed above. Benefits of the proposed project to the general public and the scientific community should be discussed. A year-by-year summary of proposed work must be included. The project description, including references but excluding figures and other visual materials, must not exceed 15 pages of text. In general, proposals from three or more investigators may include a project description containing up to 15 pages of overall project description plus up to 5 additional pages for individual project descriptions.

e. Budget. Applicants must submit a Standard Form 424 "Application for Federal Assistance," including a detailed budget using the Standard Form 424A, "Budget Information--Non-Construction Programs." The form is included in the standard NOAA application kit. The proposal must include total and annual budgets corresponding with the descriptions provided in the project description. Additional text to justify expenses should be included as necessary.

f. Vitae. Abbreviated curriculum vitae are sought with each proposal. Reference lists should be limited to all publications in the last 3 years with up to five other relevant papers.

g. Current and pending support. For each investigator, submit a list which includes project title, supporting agency with grant number, investigator months, dollar value, and duration. Requested values should be listed for pending support.

C. Submission Dates and Times

The deadline for receipt of proposals at the NOAA/NWS office is 5 p.m., local time, October 23, 2003. Proposals received after the deadline will be returned to the sender without further consideration. NOAA/NWS determines whether an application has been submitted before the deadline by date/time stamping the applications as they are physically received in the NOAA/NWS office.

D. Intergovernmental Review

Applications under this program are not subject to Executive Order 12372, “Intergovernmental Review of Federal Programs.”

E. Funding Restrictions

No special restrictions apply.

F. Other Submission Requirements

All applicants are to submit hard copy proposals only. Facsimile transmissions and electronic mail submission of proposals will not be accepted. The hard copies may be submitted by postal mail, commercial delivery service, or hand-delivery. Proposals must be submitted to: NOAA/NWS; 1325 East-West Highway, Room 15330; Silver Spring, Maryland 20910-3283.

V. Application Review Information

A. Evaluation Criteria

The evaluation criteria and weighting of the criteria are as follows:

1. Importance/Relevance and Applicability of Proposal (35 percent.)

This criterion ascertains whether there is intrinsic value in the proposed work and/or relevance to NOAA, federal, regional, state, or local activities. For the CSTAR competition this includes: What is the likelihood of the proposed science activities to improve operational hydrometeorological services? Are proposed research activities transferrable to forecast operations in a reasonable time frame? What is the degree of collaboration with multiple operational units throughout the project? What is the level of planning by researchers to integrate results into operations successfully and efficiently?

2. Technical/Scientific Merit (30 percent).

This criterion assesses whether the approach is technically sound and/or innovative, if the methods are appropriate, and whether there are clear project goals and objectives. For the CSTAR competition this includes: What is the intrinsic scientific value and maturity of the subject and the study proposed as they relate to the specific science priorities? Were focused scientific objectives and strategies, including data management considerations, project milestones, and timeliness, used?

3. Overall Qualification of Applicants (20 percent).

This criterion ascertains whether the applicant possesses the necessary education, experience, training, facilities, and administrative resources to accomplish the project. For the CSTAR competition this includes: Do PIs clearly document past scientific collaborations with operational meteorologists? Have past interactions been successful? Are researchers likely to maintain effective and consistent interactions with operational forecasts throughout the course of the proposed research program? Have researchers demonstrated the ability to conduct successful research?

4. Project Costs (15 percent).

This criterion evaluates the budget to determine if it is realistic and commensurate with the project needs and time-frame. For the CSTAR competition this includes: Do researchers demonstrate the ability to leverage other resources? Is there a high ratio of operationally useful results versus proposed costs?

5. Outreach and education (0%).

This criterion assesses whether the project provides a focused and effective education and outreach strategy regarding NOAA's mission to protect the Nation's natural resources. The CSTAR competition does not use this criterion.

B. Review and Selection Process

An initial administrative review/screening is conducted to determine compliance with requirements/completeness. All proposals will be evaluated and individually ranked in accordance with the assigned weights of the above evaluation criteria by an independent peer panel review. Three to seven NWS experts representing NWS Regions and Centers may be used in this process. The merit reviewers' ratings are used to produce a rank order of the

proposals. The Selection Official selects proposals after considering the peer panel reviews and selection factors listed below. In making the final selections, the Selecting Official will award in rank order unless the proposal is justified to be selected out of rank order based upon one or more of the selection factors.

C. Selection Factors

The Merit review ratings shall provide a rank order to the Selecting Official for final recommendation to the NOAA Grants Officer. The Selecting Official shall award in the rank order unless the proposal is justified to be selected out of rank order based upon 1, 2a, 2b, 2d, 2e, 3 and 5 of the following factors:

1. Availability of funding
2. Balance/distribution of funds
   a. Geographically
      b. By type of institutions
      c. By type of partners
      d. By research areas
      e. By project types
3. Duplication of other projects funded or considered for funding by NOAA/federal agencies
4. Program priorities and policy factors.
5. Applicant's prior award performance
6. Partnerships with/Participation of targeted groups

Regarding Selection Factor 2b, while a university may submit more than one application, the selecting official may limit the awards to only one per university.

D. Anticipated Announcement and Award Dates

Subject to the availability of funds, review of proposals will occur during November and December 2003, and funding should begin during spring 2004 for most approved projects. April 1, 2004, should be used as the proposed start date on proposals, unless otherwise directed by the Program Officer.

VI. Award Administration Information

A. Award Notices

The notice of award is signed by the NOAA Grants Officer and is the authorizing document. It is provided by postal mail to the appropriate business office of the recipient organization.

NOAA/NWS will notify unsuccessful applicants, in writing, by postal mail. Those proposals that are not ultimately selected for funding will be destroyed.

B. Administrative and National Policy Requirements

Administrative and national policy requirements for all Department of Commerce awards are contained in the Department of Commerce Pre-Award Notification Requirements for Grants and Cooperative Agreements published in the Federal Register on October 1, 2001 (66 FR 49917), as amended by the Federal Register notice published on October 30, 2002 (67 FR 66109). You may obtain a copy of these by notices by contacting the agency contact(s) under Section VII, or by going to the website at:

www.access.gpo.gov/su_docs/aces140.html.

Applicants whose proposed projects may have an environmental impact should furnish sufficient information to assist proposal reviewers in assessing the potential environmental consequences of supporting the project.

C. Reporting

Financial reports are to be submitted to the NOAA Grants Officer and Performance (technical) reports are to be submitted to the NOAA program officer**.** Financial and performance reports are semi-annual.

VII. Agency Contact(s)

Contact Sam Contorno, NOAA/NWS; 1325 East-West Highway, Room 15330; Silver Spring, Maryland 20910-3283, or by phone at 301-713-3557 ext. 150, or fax to 301-713-1253, or via internet at samuel.contorno@noaa.gov.